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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 20189-2025

Replacing GB/T 22147-2008

**Determination of beta-receptor agonists in feeds - Liquid
chromatography-tandem mass spectrometry**

饲料中 β -受体激动剂的测定 液相色谱-串联质谱法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

This document replaces GB/T 20189-2006 "Determination of ractopamine in feed - High performance liquid chromatography method" and GB/T 22147- 2008 "Determination of salbutamol, ractopamine and clenbuterol hydrochloride in feed by liquid chromatography-mass spectrometry", GB/T 20189- Compared with GB/T 22147-2008, in addition to structural adjustments and editorial changes, the main technical changes in 2006 are as follows.

- a) The scope of application, detection limit and quantification limit have been changed, and 21 beta-receptor agonists have been added as test objects (see Chapter 1, GB/T 20189-2006 and Chapter 1 of GB/T 22147-2008);
- b) The principles have been changed (see Chapter 4, Chapter 3 of GB/T 20189-2006 and GB/T 22147-2008);
- c) The reagents or materials have been changed (see Chapter 5, Chapter 4 of GB/T 20189-2006 and GB/T 22147-2008);
- d) The instruments and equipment have been changed (see Chapter 6, Chapter 5 of GB/T 20189-2006 and GB/T 22147-2008);
- e) The sample preparation method has been changed and sampling has been deleted (see Chapter 7, GB/T 20189-2006 and GB/T 22147-2008). Chapter 6);
- f) The test procedures have been changed (see Chapter 8, 7.1 of GB/T 20189-2006 and 7.1.1 of GB/T 22147-2008);
- g) The precision has been changed (see Chapter 10 of GB/T 20189-2006 and Chapter 9 of

GB/T 22147-2008).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed and coordinated by the National Feed Industry Standardization Technical Committee (SAC/TC 76).

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The previous versions of this document and the documents it replaces are as follows.

--Published as GB/T 20189-2006 in 2006 and GB/T 22147-2008 in 2008; --This is the first revision.

Determination of beta-receptor agonists in feed Liquid chromatography-tandem mass spectrometry

1 Scope

This document describes a method for the determination of 21 beta-agonists in feed by liquid chromatography-tandem mass spectrometry.

This document applies to the use of bambuterol, fenoxypionamide, carboplatin, and succinate in compound feeds, concentrates, concentrate supplements, and additive premixes.

Butrol, Clenpent, Clenpro, Clenserol, Clenbuterol, Ractopamine, Ritodrine, Clorprenaline, Mabutrol, Mapentol Luo, hydroxymethyl clenbuterol, zilpaterol, salbutamol, terbutaline, tolbuterol, cibuterol, cimaterol, bromobuterol and bromo Determination of Clenbuterol.

In this document, the detection limit of salbutamol, ractopamine, and clenbuterol was 5 µg/kg, and the quantification limit was 10 µg/kg; the The detection limit was 10 µg/kg and the quantification limit was 50 µg/kg.

2 Normative references

GB/T 6682

GB/T 20195

3 Terms and Definitions

There are no terms or definitions that require definition in this document.

4 Principles

The analytes in the sample were extracted with hydrochloric acid-methanol solution, purified by solid phase extraction column or filter membrane, and determined by liquid chromatography-tandem mass spectrometry.

Calibration was performed using a matching standard curve and quantification was performed using the external standard method.

5 Reagents or materials

Unless otherwise specified, only analytical grade reagents were used.

5.1 Water. GB/T 6682, Grade 1.

5.2 Methanol. chromatographic grade.

5.3 Acetonitrile. chromatographic grade.

5.4 Formic acid. chromatographic grade.

5.5 Hydrochloric acid solution (0.1 mol/L). Pipette 8.3 mL of hydrochloric acid, dilute with water to 1000 mL, and mix thoroughly.

5.6 Hydrochloric acid-methanol solution. Pipette 80 mL of hydrochloric acid solution (5.5), add 20 mL of methanol (5.2), and mix well.

5.7 5% ammonia methanol solution. Pipette 5 mL of ammonia and 95 mL of methanol (5.2) and mix well.